

An unusual experience with Ureterorenoscopy: a case report.

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ABSTRACT

A 42 years lady was reported. Patient was worked up and was found to have stone in the upper third of the right ureter. She underwent a session of Extracorporeal Shock Wave Lithotripsy (ESWL) but the stone was too hard to fragment in a single session. She then underwent ureterorenoscopy (URS) the next day.

The ureteric orifice was very tight for negotiation of ureterorenoscope due to tight ureteric stricture. We finally managed to negotiate beyond the stricture up to the level of stone impaction. However, during withdrawal of the scope, nearly the whole length of the ureter was avulsed out along with the latter. Immediate exploration of the abdomen was performed and we found complete avulsion of the entire length of the ureter. We performed an ileal transposition to bridge the gap formed after avulsion of ureter.

Keywords: avulsion, extracorporeal shock wave lithotripsy, KUB (kidney-ureter-bladder), ureter, ureterorenoscopy.

INTRODUCTION

With the introduction of rigid ureterorenoscope, there were several series of ureteral injuries.¹ Complete avulsion of the ureter is a catastrophic complication and is fortunately exceptionally rare. Weinber et al reviewed 941 ureterorenoscopies and reported only five cases of avulsion,² while Kastokopoulos et al, in a review of 1000 ureterorenoscopies, did not have a single case of ureteric avulsion.³ Less than five cases of complete ureteral avulsion have been reported till date based on search from Medline.

A CASE REPORT

A 42 years old woman presented to us with a history of right loin pain associated with fever for 3 days. She had previous history of open right pyelo-nephrolithotomy done in one of the hospitals in Kathmandu valley 10 years ago. There were no significant clinical findings except tender right loin and low grade fever. Intravenous urography revealed delayed right kidney function and a 10mm calculus at L3-L4 level in the control film (Figure

1). An urgent ultrasound revealed moderate right hydronephrosis with stone at the proximal ureter. Blood investigations revealed normal renal function tests and complete blood count was also within normal limits. Urine routine examination revealed plenty of red blood cells with few pus cells in it. Urine was sent for culture and sensitivity test as well, which did not yield any growth.



Figure 1. X-ray KUB, showing stone

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An urgent Extracorporeal Shock Wave Lithotripsy (ESWL) was performed. The stone was not satisfactorily fragmented even after 4000 shock waves and X-ray of Kidney-Ureter-Bladder (KUB) did not reveal any sign of stone fragmentation at all. We advised her to undergo percutaneous nephrostomy, decompression of the obstructed system and to have a second session of lithotripsy after 2 weeks. She denied the offered options and instead wanted to get rid of the stone in the same admission. We then, advised her to have ureterorenoscopy and possible stone retrieval or fragmentation along with insertion of stent. However, the possibility of subsequent repeat extracorporeal lithotripsy or percutaneous nephrolithotomy (PCNL) was also explained. Intra-operatively, we saw a short ureteric stricture at the right lower ureter at ureteroscopy (Karl Storz rigid ureteroscopy 7.5F/9F).

An initial attempt to pass a guidewire failed, and then URS was directly inserted up to the right ureteric orifice. A guide wire was then reinserted under direct vision through the orifice; we then tried to negotiate the URS over the guidewire but the tight stricture would not allow. A second guidewire was inserted then URS was negotiated with some difficulty up to the level of ureter where the stone was impacted. The stone, however, had already been pushed back into the kidney. URS was withdrawn and we tried to slide a JJ stent over the guidewire but it was not easy. URS was reinserted to manipulate the guidewire up to the renal pelvis in order to ease JJ stent insertion. During an attempt to negotiate URS beyond the stricture area, a first give away sensation was felt. URS was gently advanced up to the proximal ureter and guidewire was inserted into the renal pelvis. The ureterorenoscope was then withdrawn with ease and a 16 cm long avulsed ureter was seen on the ureterorenoscope (Figure 2).



Figure 2. Complete ureteral avulsion along with the URS with 2 guidewires in situ.

After an urgent discussion with the patient's family members, we performed a laparotomy and transposed

a 15-20 cm long segment of ileum with intact vascular pedicle in order to replace the whole ureter Laparotomy Ileal transposition (Figure 3).

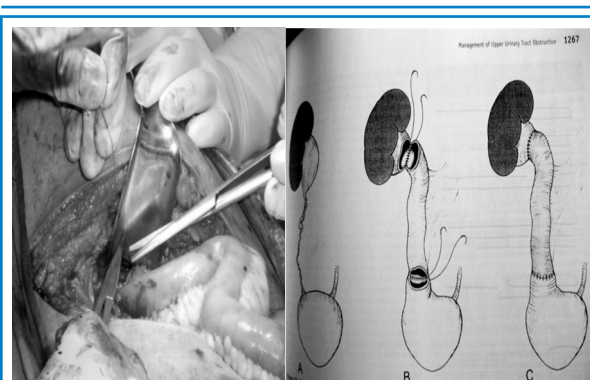


Figure 3. Laparotomy Ileal transposition

Post operatively, recovery was uneventful and the patient was discharged on 10th post operative day. She was followed up after three months and renal function tests were repeated which were normal. Then intravenous urography was performed. IVU revealed normally functioning bilateral kidneys without any evidence of hydronephrosis (Figure 4).



Figure 4. IVU Showing normal functioning Kidney.

DISCUSSION

The present case report illustrates a dreadful complication of ureterorenoscopy, that is, complete avulsion of ureter. This is an unusual type of avulsion and very few cases (less than five cases) have been reported in the literature. An almost similar incidence had been reported by Dublin N et al.⁴ They had complete avulsion of ureter while attempting URS removal and had to perform nephrectomy in the end. Lutter I et al⁵ had reported a case of complete ureteral avulsion while

performing URS and extraction with dormia basket. They salvaged the system by doing renal auto-transplantation.

The mechanism of complete avulsion of ureter in this patient occurred during advancement of ureterorenoscope through a very tight ureteric stricture up to the level where the stone was tightly impacted. The tight grip of fibrous stricture on the body of URS caused the first avulsion at distal third of ureter during its advancement. The second avulsion occurred during withdrawal of URS, at the site where stone was impacted and this area was further weakened by the microtrauma created by the shockwave a day earlier. The bottom line is that there was severe discrepancy between the size of the URS used and the caliber of the patient's ureter.⁶

In retrospect, it is important to anticipate this mishap. Serial ureteric dilators, either with a graduated serial dilator or a balloon ureteric dilator can be used under fluoroscopy control which can dilate up to 15-18 F diameter. Another option would be to place an indwelling ureteric stent for up to a week, which could make further URS easier due to passive ureteric dilatation. Immediately after ESWL, one should not be subjected to endourological intervention. In fact,

sufficient time of at least a week's gap should be given to allow spontaneous healing of the trauma created by the lithotripsy itself. It is also important to have different sizes of ureterorenoscopes to decrease the incidence of ureteric injuries.

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